

REMARKS

Claims 1, 3-8, 10-11 and 13-16 are pending in this application. By this Amendment, claims 1, 3-4, 6, 10-11 and 15 are amended to address grammar, clarity, and dependency; claims 2, 9 and 12 are cancelled; and claim 16 is added. Independent claims 1 and 6 are further amended to recite that the levels of gradation exposure are made with respect to each of areas of the recording layer corresponding to a single pixel of the data page. Support can be found, for example, at page 7, lines 8-14 and page 14, lines 8-12 of the specification as filed. Claim 4 is further amended to recite a micromirror device, finding support, for example, in digital micromirror device (DMD) 18D (Fig. 1). New claim 16 includes features from claim 1 and prior claim 3. No new matter is added.

Entry of the amendments is proper under 37 CFR §1.116 because the amendments: (a) place the application in condition for allowance for the reasons discussed herein; (b) do not raise any new issue requiring further search and/or consideration because the amendments are made for clarity and claim 16 includes features of claim 1 and prior claim 3; (c) do not present any additional claims without canceling a corresponding number of finally rejected claims; and (d) place the application in better form for appeal, should an appeal be necessary. Entry of the amendments is thus respectfully requested.

I. The Claims Are Patentable Over The Applied References**A. Claims 1-5**

The Office Action rejects claims 1-5 under 35 U.S.C. §102(e) over U.S. Patent No. 6,806,982 to Newswanger et al. (Newswanger). Applicants respectfully traverse the rejection.

Regarding independent claim 1, Newswanger fails to disclose "making (N + 1) levels of gradation exposure with respect to each of areas of the recording layer corresponding to a single pixel of the data page" (emphasis added).

Newswanger discloses "For example, in an experiment where holograms were recorded in a 25 mm^2 area using six 35 ns pulses of 0.5 mJ/cm^2 , 100 Hz, 1 kHz, and 10 kHz pulse frequencies produced diffraction efficiencies of 89%, 83%, and 12% respectively. Additionally, the multiple pulse exposures need not use the same laser-created interference pattern for each exposure. In an example where the object beam of the system is modulated by an SLM, the first exposure can be created using a 'white' image (e.g. a white screen as displayed on the SLM) while the second exposure can be created using the desired image." (col. 6, line 53 to col. 7, line 10). In summary, Newswanger discloses that multiple levels of gradation are done by areas of 25 mm^2 , which is not an area corresponding to a single pixel. Thus, Newswanger fails to disclose making $(N + 1)$ levels of gradation exposure with respect to each of areas of the recording layer corresponding to a single pixel, as claimed.

Regarding dependent claim 4, Newswanger fails to disclose a micromirror device as claimed. Instead, Newswanger discloses pulsed light emission from a pulsed laser 110.

Regarding dependent claim 5, Newsanger fails to disclose "the number of times of exposure for the time t_1 within the exposure time t_0 is controlled with respect to each of the areas so that the object beam after the reflection has a generally-uniform beam intensity distribution" because Newswanger does not disclose that the number of times of exposure is used to control a uniformity of beam intensity distribution. Because Newswanger discloses exposing the entire recording area (col. 6, line 53 to col. 7, line 10), it follows that Newswanger does not need to control the exposure time to ensure a uniformity of beam intensity distribution because there are no differently exposed areas corresponding to a single pixel.

For the foregoing reasons, Applicants request withdrawal of the rejection.

B. Claims 6-15

The Office Action (1) rejects claims 6-8 under 35 U.S.C. §103(a) over Newswanger in view of U.S. Patent Publication No. 2003/0117615 to Mui; and (2) rejects claims 9-15 under 35 U.S.C. §103(a) over Newswanger in view of Mui, and further in view of U.S. Patent Publication No. 2001/0013959 to Long. Applicants respectfully traverse the rejections.

Regarding independent claim 6, Newswanger fails to disclose "the reflection type spatial light modulator is configured so that it is capable of at least N times of reflection with respect to each of areas of the recording layer within an exposure time t_0 , where t_0 is the exposure time necessary for exposing one of the areas of the recording layer by the object beam corresponding to a single pixel of the data page" (emphasis added).

Independent claim 6 is patentable for the same reasons as independent claim 1. In particular, Newswanger does not disclose gradated exposing of areas corresponding to a single pixel. Mui and Lee, cited as disclosing other features, do not cure the deficiencies of Newswanger.

Dependent claim 7 is patentable over the applied references for the same reasons claim 4 is patentable, in that Newswanger does not disclose a micromirror. Mui and Lee, cited as disclosing other features, do not cure the deficiencies of Newswanger.

Dependent claims 10-11 and 13-15 are patentable for the same reasons claim 5 is patentable and because Mui and Lee fail to cure all the deficiencies of Newswanger.

For the foregoing reasons, Applicants request withdrawal of the rejections.

C. Claim 16

Regarding new independent claim 16, the applied references fail to disclose "making (N + 1) levels of gradation exposure with respect to each of areas of the recording layer corresponding to a single pixel of the data page" (emphasis added). Newswanger does not

disclose gradated exposing of areas corresponding to a single pixel. Mui and Lee, cited as disclosing other features, do not cure the deficiencies of Newswanger.

Furthermore, independent claim 16 is patentable for the same reasons as independent claims 1 and 6 in that the applied references fail to disclose separately exposing areas corresponding to a single pixel by multiple levels of gradation as claimed: "exercising control so that the object beam in the object optical system is reflected in an exposure direction so as to be incident on the holographic recording medium or in a non-exposure direction so as not to be incident on the holographic recording medium selectively pixel by pixel in accordance with the data page to be recorded, making (N + 1) levels of gradation exposure with respect to each of areas of the recording layer corresponding to a single pixel of the data page by the object beam with a single exposure time t_1 given by dividing t_0 by N, where t_0 is an exposure time necessary for exposing one of the areas of the recording layer corresponding to a single pixel of the data page' (emphasis added).

II. Conclusion

In view of the foregoing, it is respectfully submitted that this application is in condition for allowance. Favorable reconsideration and prompt allowance are earnestly solicited.

Should the Examiner believe that anything further would be desirable in order to place this application in even better condition for allowance, the Examiner is invited to contact the undersigned at the telephone number set forth below.

Respectfully submitted,



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Attachment:
Petition for Extension of Time

Date: October 27, 2008

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